



# Distributed Generation

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# Background

- Federal CAA directs EPA to establish National Ambient Air Quality Standards (NAAQS) for commonly-occurring air pollutants
- NAAQS are national levels of acceptable concentrations of these pollutants in outdoor air
- These are known as “criteria pollutants”



# The Existing NAAQS

- EPA has set NAAQS for 6 criteria pollutants:
  - **ground-level ozone (nitrogen oxides [NO<sub>x</sub>] and volatile organic compounds are precursors)**
  - particulate matter
  - lead
  - nitrogen dioxide
  - sulfur dioxide
  - carbon monoxide



# Common NO<sub>x</sub> Sources

- Motor vehicles
- Power plants
- Factories (e.g., chemical plants & refineries)
- Fossil fuel combustion processes



# 1-Hour Ozone Standard

- EPA has set the standard at 0.12 parts per million
- The ozone monitors measure levels in parts per billion (ppb)
- An area violates this standard when readings at any one monitor equal or exceed 125 ppb more than 3 times during any three-year period



# Areas Designated Nonattainment for the 1-Hour Ozone Standard

- Houston/Galveston
  - Brazoria, Chambers, Fort Bend, Galveston, Harris, Liberty, Montgomery, and Waller Counties
- Dallas/Fort Worth
  - Collin, Dallas, Denton, and Tarrant Counties
- Beaumont/Port Arthur
  - Hardin, Jefferson, and Orange Counties
- El Paso
  - El Paso County



## El Paso

- El Paso is currently designated non-attainment for particulate matter, carbon monoxide, and ozone
- However, data for the area shows it has technically attained compliance for all three pollutants
- The TCEQ is currently working with local officials and EPA to pursue redesignation for all three pollutants beginning with ozone



# 8-Hour Ozone Standard

- EPA has set this standard at 0.08 ppm
- An area violates this standard when the three-year average of each year's fourth highest reading at the controlling monitor equals or exceeds 85 ppb
- Designations of 8-hour nonattainment areas are currently scheduled to be finalized by EPA in April 2004





# Voluntary Plans

- Austin, San Antonio, Tyler/Longview/Marshall, and Corpus Christi comply with the 1-hour ozone standard
- All have had exceedances of, but are not necessarily out of compliance with, the 8-hour ozone standard
- All are in the eastern portion of Texas
- All participate in voluntary programs to reduce emissions of ozone precursors



# History Lesson

- ◆ In 1998, Texas PUC and TCEQ produced a report discussing the potential affects of electricity restructuring on air quality in Texas
- ◆ Electricity restructuring bill (SB7) was passed in 1999
- ◆ The PUC and TCEQ worked to ensure that the installation of low-emitting distributed generation units was facilitated



## Facilitating Distributed Generation

- ◆ Texas PUC approved pre-certification standards, eliminating the need for testing and evaluation of the effects on the local distribution grid
- ◆ TCEQ issued an air quality standard permit for low-emission distributed generation units



# Air Quality Authorization

- ◆ Permit by rule (30 TAC Section 106.101) for units at a domestic residence for domestic use
- ◆ Permit by rule (30 TAC Section 106.511) for units used for emergency only
- ◆ Standard permit (30 TAC Section 116.611) for units that generate electricity some of which to be supplied to the distribution grid



# Permit by Rule Requirements for domestic units

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Any facility constructed and operated at a domestic residence for domestic use is permitted by rule.



# Permit by Rule Requirements for emergency units

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Units used only for portable, emergency, and/or standby services, provided that the maximum annual operating hours doesn't exceed 10% of the normal annual operating schedule of the primary equipment.



# Standard Permit Requirements East Texas Region ( $\leq 10$ MW)

## Prior to 1 January 2005

- 1.65 lbs NO<sub>x</sub> per MWh ( $\leq 300$  hrs per year)
- 0.47 lbs NO<sub>x</sub> per MWh ( $>300$  hours per year)

## After 1 January 2005

- ◆ 0.47 lbs NO<sub>x</sub> per MWh ( $<300$  hrs per year)
- ◆ 0.14 lbs NO<sub>x</sub> per MWh ( $>300$  hrs per year)



# Standard Permit Special Requirements

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Electric generating units that use landfill gas, digester gas, or oil field gas with less than 1.5 grains  $\text{H}_2\text{S}$  or 30 grains total sulfur must meet a  $\text{NO}_x$  emission limit of 1.77 lbs per MWh





# Standard Permit Requirements West Texas Region ( $\leq 10$ MW)

- 21 lbs NO<sub>x</sub> per MWh ( $\leq 300$  hrs per year)
- 3.11 lbs NO<sub>x</sub> per MWh ( $> 300$  hours per year)



## Standard Permit Requirements greater than 10 MW

- 0.38 lbs NO<sub>x</sub> per MWh ( $\leq 300$  hrs per year)
- 0.14 lbs NO<sub>x</sub> per MWh ( $>300$  hours per year)



# Resources/Questions

- ◆ TCEQ Website: [www.tceq.state.tx.us](http://www.tceq.state.tx.us)
- ◆ PUC Website: [www.puc.state.tx.us](http://www.puc.state.tx.us)
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